Catalogue no. 11-624-MIE — No. 017
ISSN: 1708-0169
ISBN: 978-0-662-46548-5

Analytical Paper

Insights on the Canadian Economy

Not Dutch Disease, It's China Syndrome

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August 2007

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Published by authority of the Minister responsible for Statistics Canada

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La version française de cette publication est disponible (n° 11-624-MIF au catalogue, n° 017).

Note of appreciation
Canada owes the success of its statistical system to a long-standing partnership between Statistics Canada, the citizens of Canada, its businesses, governments and other institutions. Accurate and timely statistical information could not be produced without their continued cooperation and goodwill.

Abstract

This paper empirically investigates how the Canadian economy has evolved following the rise in commodity prices and appreciation of the Canadian dollar that began in 2003. The adjustment in the manufacturing industry has garnered the greatest attention because it has borne the brunt of job losses. However, the adjustment of the manufacturing industry has not been straightforward. Rather, a complex reallocation has been taking place within manufacturing that has been predominantly due to the integration of emerging nations into the global economy. The increased commodity prices and falling manufactured prices caused by this integration have affected durable and non-durable manufacturing industries differently. Non-durable manufacturers have tended to see their competitiveness eroded and their output has tended to fall. Durable manufacturers, on the other hand, have increased output in response to the resource boom and increased demand in general. The result has been stable manufacturing output overall, accompanied by a re-orientation of manufacturing output away from non-durables and toward durables.

The appreciated dollar and higher commodity prices have also led to a more widespread industrial reallocation in Canada. The higher commodity prices have started a resource boom, particularly in Alberta. The boom has led to rising resource industry employment, while manufacturing employment declined, and to rising service-sector employment. It has contributed to inter-provincial migration, and has greatly increased the purchasing power of Canadian incomes as terms of trade have improved.

Executive summary

This paper examines the extent to which the Canadian economy is suffering from 'Dutch disease.' It presents empirical evidence about the degree to which the booming resource sector is affecting the rest of the Canadian economy.

Contrary to expectations, the paper finds that Canada is not in the throes of 'Dutch disease.' Rather, the empirical investigation suggests that the Canadian economy and labour market have proven themselves flexible enough to adjust to a higher commodity price and higher dollar environment. Moreover, although both the Netherlands and Canada experienced a currency appreciation in conjunction with a resource boom, the sources of the boom are distinctly different and are leading to different adjustment paths.

Through its course, the paper examines a number of issues associated with the resource sector boom. They are outlined below.

- What is driving the resource boom and where are its effects manifesting themselves?

  The integration of emerging nations, particularly China, and a global economic expansion have led to increased demand for raw materials and falling manufactured goods prices. As a result, there has been an increase in commodity prices, which has created a resource

boom. In Canada, the boom is leading to changes in wage growth, relative prices, output, employment and migration.

- What are the impacts on wages?

  The increase in commodity prices has led to more demand from commodity producing firms for labour, and has led to higher wage growth in the resource industries. Part of the additional income that resource workers have earned has been spent on other goods and services, and resource firms have increased investment levels. As a result, income growth has also increased in a number of other sectors, such as construction or finance, insurance, real estate and leasing.

- What are the impacts of relative price movements?

  The appreciated dollar, higher commodity prices and falling manufactured goods prices have led to a terms of trade improvement (higher export prices relative to import prices) for Canada. This has increased the volume of imports that Canada is purchasing abroad with its exports. As a result, terms of trade adjusted real gross domestic product (GDP) measures have outpaced real GDP growth because the purchasing power of Canadian earnings has risen faster than the earnings themselves.

- What is the impact on employment?

  The resource boom is leading to a reallocation of employment across sectors. The higher prices of resources are attracting labour while the falling prices of some manufactured goods are leading to lower manufacturing employment. Service sector employment has increased in step with demand. As a result, there is a reallocation of employment from goods to services and from manufacturing to resources.

- How is manufacturing being affected?

  The appreciated dollar and higher commodity prices have exacerbated the effects of competition from emerging nations in some industries. There have been employment and output drops in areas such as clothing and textile manufacturing, leather manufacturing and pulp and paper manufacturing.

  Outside of the automotive sector, which is undergoing a transition due to changes in consumer preferences, many of the durable goods manufacturing industries have increased their output levels since the rise in commodity prices and the appreciation of the dollar. Many of these industries, such as machinery and equipment manufacturers or metal manufacturers, have benefited from the strong investment in the resource sector. They have increased productivity during this period.

- Is inter-provincial migration affected?

  Because resources are not equally distributed across Canada, the resource boom has led to increased inter-provincial migration. Alberta and British Columbia have been the beneficiaries of the resource boom while other provinces have seen net out-migration.

Introduction

Resource-producing industries occupy a unique niche within a modern economy. Their output is an important input for production, their commodities experience volatile price changes on world markets, and their extraction processes require large amounts of investment. Moreover, discovering resources typically requires large-scale investment in exploration activity.

When a new resource is found, or the price of a resource commodity increases rapidly, a resource boom often is triggered. The boom draws labour and capital toward the resource sector, and can mean adjustment for other sectors within an economy. One resource boom that has garnered considerable attention occurred following the discovery of offshore oil and gas in the Netherlands in the 1960s and 1970s. The discovery generated a resource boom that led to an appreciation of the Dutch guilder and a drop in manufacturing output and employment.[1] Since this event, the combination of a booming resource sector, a rising currency and a resulting decline in the competitiveness of non-resource sectors has been referred to as 'Dutch Disease.'

This paper provides a brief, and necessarily simplified, overview of some broad trends in the Canadian economy that accompanied the recent surge in commodity prices and the exchange rate. It is not intended as a definitive account of recent structural changes and their causes, especially in manufacturing. But it will inform readers of the broad changes occurring in our economy, and better prepare them to understand the unfolding discussion about these structural shifts.

The increase in world commodity prices that began in 2003 has generated a resource boom in Canada. Although metals prices also contributed to the boom, the rise in the price of oil has been particularly important. Its price has risen substantially, doubling from US$20 to US$40 per barrel between 2002 and 2004, before hitting a peak of over US$75 per barrel in 2007. The combination of rising prices and new extraction technologies made the more-intensive and thus costly oil extraction from the oil sands of northern Alberta feasible.[2] The increase in commodity prices was accompanied by a considerable appreciation of the Canadian-U.S. exchange rate, reaching US$0.95 in 2007, up nearly 50% from US$0.63 in 2002. The post-2002 commodity price and exchange rate movements for Canada, at first glance, do seem to resemble the events that precipitated adjustments in the Dutch economy.

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1. The term 'Dutch disease' is often used as a harbinger of long-term problems. However, even in the Netherlands the impact of Dutch disease was short-lived. As Hutchinson (1994) points out, the volume of manufacturing output recovered quickly from its cyclical low, surpassing its pre-downturn high by approximately 30% six years later.
2. As described in Statistics Canada's Overview of Energy section on Alberta's abundant oil sands, available at http://www41.statcan.ca/1741/ceb1741_001_e.htm, "exploiting the oil sands is expensive because, even after extracting the oil sands using mining techniques or recovery using injected steam, the oil must be separated from the mineral matter and the water, and then further refined. It takes roughly two tonnes of oil sands to extract enough oil to fill one barrel. As a result, the oil extracted from the oil sands becomes profitable only when the world price of oil tops US$25. Since the price of a barrel of oil has increased above that benchmark price, the refining of petroleum from the oil sands has been a viable option."

However, while the Dutch case involved the discovery of a new resource, the Canadian case stems from the integration of emerging nations, symbolized by China, into the global economy. The integration of China had the effect of a large productivity increase in the global manufacturing sector. It increased the supply of manufactured products on the world market and the demand for inputs. As noted in *The Economist* (2005), the integration of China has simultaneously lowered the prices of consumer goods and raised resource prices.

The combination of price changes initiated by the integration of Asian countries into the world economy helped accelerate widespread restructuring of the Canadian economy. The resource sector boomed, attracting labour and investment. Many non-resource sector industries are also exhibiting growth as the increased income in the resource sector is spent. Throughout this reallocation, manufacturing has borne the brunt of job losses. However, the impact has varied within manufacturing. In a few industries (notably forestry and textiles) the resource boom and higher dollar accompanied an ongoing restructuring. Other industries, such as machinery and equipment, computers and electronics, primary metal and fabricated metals have expanded their output since 2003, feeding the resource sector and domestic demand in general.

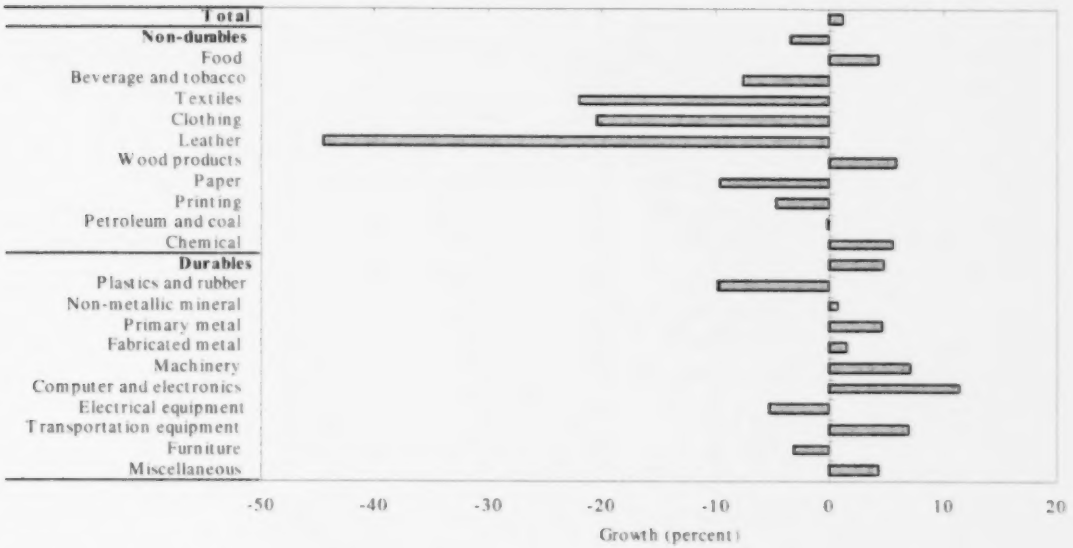
Incomes rose and, due to the stronger dollar and lower import prices, their purchasing power goes further. Unemployment is at record lows and the labour force has demonstrated flexibility in migrating to areas of the country with the strongest labour markets. Expanding on these trends for manufacturing output, employment, incomes, and migration, this paper describes the Canadian resource boom adjustment, a case study we characterize as 'China syndrome,' not Dutch disease.[3]

Manufacturing output up as resources boom

One of the main symptoms of Dutch disease is a simultaneous drop in output and employment in the manufacturing sector. However, the reality is that from 2003 to 2006 manufacturing output in Canada expanded by 1.3% (Figure 1), thus differentiating the Dutch and Canadian experiences. The increased level of manufacturing output stemmed from durable goods production, which rose 4.8%. Non-durable goods output fell by 3.4% during the same period.

3. The analysis will be informed by the booming sector model developed in Corden and Neary (1982) and Corden (1984).

Figure 1
Real gross domestic product growth, manufacturing sector, 2003 to 2006



Source: Statistics Canada, CANSIM Table 379-0017.

The difference between durables and non-durables stems from how their outputs are used, their ability to adapt to higher input prices, and their reaction to foreign competition. In the non-durable sector, industries that competed the most intensely with emerging economies such as China had their usual way of doing business challenged.

Within the non-durable sector, output declined sharply in textiles, clothing and leather manufacturing. This was primarily due to a shift in international policies ushering in a period of liberalized trade for these products. In all three industries, output began declining before the appreciation of the dollar, which then accelerated the process.

Prior to the energy price increases, the pulp and paper industry faced declining demand for its product due to the switch to electronic media and foreign competition. These forces were slowly reshaping the industry. When energy prices rose, driving up the price of industry inputs, and the dollar appreciated, dampening prices of their product, the industry's restructuring sped up.

There have been similar changes facing the auto industry. A long-term shift in consumer preferences has led to decreased market share for North American makers and increased market share for foreign models. The higher value of the dollar and commodity prices has not been the source of this shift, although it has undoubtedly squeezed export earnings.[4]

4. The restructuring of the auto industry is concentrated within the Big Three companies while the new domestics, which are facing the same erosion of export receipts as the Big Three, are expanding output and gaining market share. There is a consensus within the auto industry, as well as the textile and newsprint industries, that while the Canadian dollar has indeed exacerbated the situation, it was not the cause of the restructuring in these industries.

Outside of autos, many durable goods industries saw increased demand for their products because of the investment taking place in the resource sector, or due to growing global demand for intermediate inputs. Industries such as machinery and equipment, computers and electronics, primary metal and fabricated metal manufacturing have increased output as demand has expanded. Moreover, the transition to higher commodity prices and a stronger dollar environment that these industries went through was supported by higher demand and falling import prices.

While these short-run adjustments have taken place within manufacturing, their presence does not mean that higher commodity prices and the stronger dollar will lower manufacturing output in the long run. As Hutchinson (1994) pointed out: "For the economy of the Netherlands, where the term 'Dutch disease' was originally applied, very little systematic and long-term net adverse consequences of natural gas development on the manufacturing sector were found."

The reality is that the Canadian manufacturing sector has not been hollowed out. To the contrary, it has shown resilience in the face of higher prices. While the stronger loonie and high commodity prices have sped up restructuring in a number of industries, they were not the original cause of the change. Throughout the resource boom, manufacturing output has remained steady and productivity has increased.

Employment and wage growth not confined to the resource sector

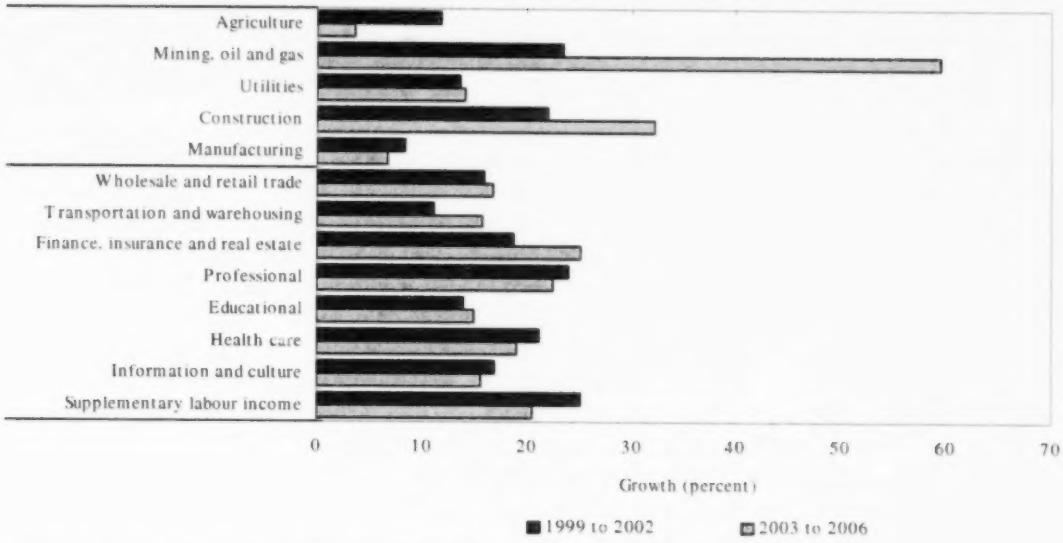
Higher commodity prices and the resulting resource boom have acted as a signal for workers and management that they can earn more by moving to the resource sector. Firms in this sector raised wages, attracting labour even as manufacturing was shedding jobs.

Through the combination of higher wages and increased employment, wage and salary growth accelerated in the mining, oil and gas industries. It also sped up output in industries that support the resource sector—construction and services such as transportation and finance and real estate (Figure 2).

These increased wages and salaries, and resulting overall income, have translated into additional demand for goods and services. The higher incomes have been spent on tradable goods, such as autos, appliances and clothes; and on non-tradables, such as houses and restaurant meals.

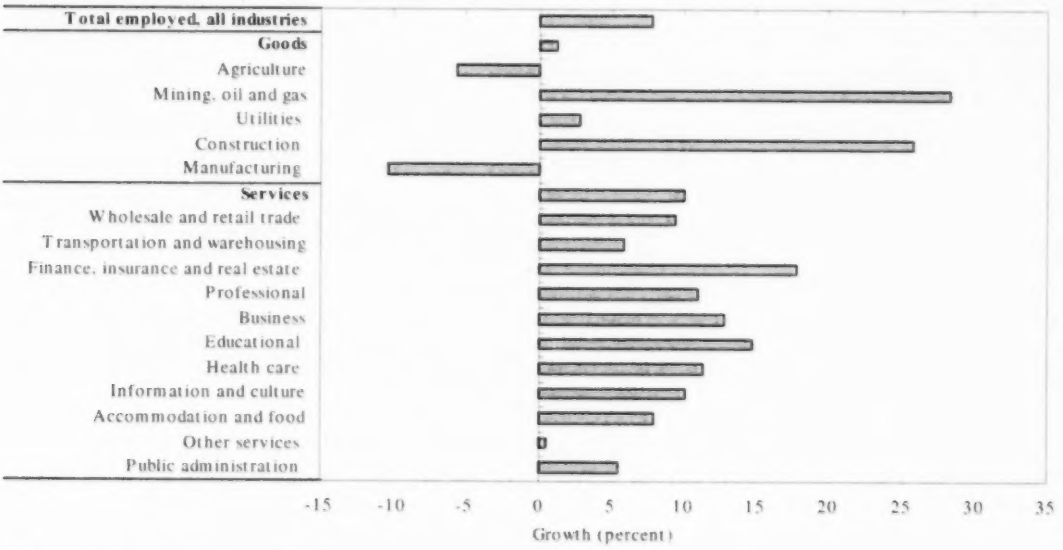
The increased demand from higher resources incomes also attracted labour, ensuring employment growth through the entire non-farm economy, save for manufacturing. Overall, the emergence of China on the world economic stage has led to a complex reallocation, resulting in an increase in resource and service sector employment in Canada, and a reduction in manufacturing employment, the only non-farm goods sector industry that experienced a loss (Figure 3).

Figure 2
Wage growth by industry, 1999 to 2006



Source: Statistics Canada, CANSIM table 382-0006.

Figure 3
Employment growth by industry, 2003 to 2007[1]



1. From January 2003 to April 2007.
Sources: Statistics Canada, Labour Force Survey, CANSIM table 282-0088.

For manufacturing employment, of the nearly 240,000 jobs lost in manufacturing between January 2003 and April 2007, over half of the drop was attributable to the textile, clothing, forestry and transportation equipment industries. As noted earlier, these industries began a period of structural adjustment prior to the resource boom. While the boom and resulting appreciation of the dollar sped up the process, it was not the cause of this restructuring.

For the textile and clothing industries in particular, a new trade agreement came into effect in 1995, which committed trade barriers to be lowered over a 10-year period. Nevertheless, the textile and clothing industries continued to increase their number of employees, peaking in 2000. As a result, in the final years of the implementation period, all of the transition to the new trade environment occurred. The coincidence of the rising dollar exacerbated this contraction.

During the post-2002 boom in commodity prices, the integration of Asia, led by China, dampened world manufacturing prices. It is China, and not the higher Canadian dollar, that appears to have played the larger role in changes to manufacturing. Similar restructuring is ongoing in many advanced countries as companies adjust to the new reality of Asian manufacturing capacity and consumer appetites for these less expensive products. During the same period, the U.S. dollar was depreciating against world currencies, and American manufacturers shed 1.7% of their jobs. In the United Kingdom, 7.8% of factory jobs disappeared, while in Germany, the losses were 3.1%.

Terms of trade growth fuels income growth

In addition to wage and salary growth and higher spending in Canada, the increase in commodity prices, the appreciation of the Canadian-U.S. exchange rate and declining prices for manufactured goods also led to significant increase in Canada's terms of trade (Figure 4). The terms of trade are defined as the price of exports relative to the price of imports. When a country's terms of trade improve, the volume of imports that can be purchased with a given number of exports increases, which raises the quantity of goods that an economy can consume.[5] The impact on domestic income is similar to productivity growth. As a result of the resource boom, Canada has been able to turn its exported resources into more imported manufactured products than it could previously.

The importance of the terms of trade improvement can be understood more clearly when it is recognized that there are two channels though which the resources of a country are transformed into goods and services. The first is domestic production, where a country transforms its resources into goods and services itself. This channel is captured by real gross domestic product (GDP).

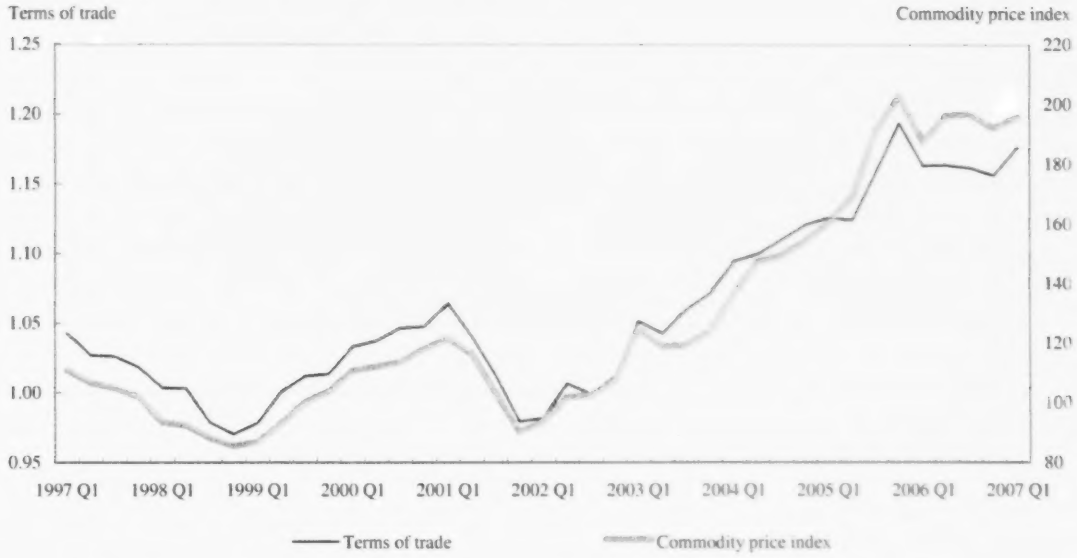
The second channel is exports and imports. On balance, Canada exports resources and imports manufactured products. When resource prices increase, or the price of manufactured products declines, the number of imports that can be purchased with exports increases.

5. The importance of terms of trade effects has been noted in Macdonald (2007), Kohli (2006, 2004), Duguay (2006), Deiwert and Morrison (1986) and Denison (1981).

The advantages that accrue to Canada through the export/import channel are captured more fully by real gross domestic income (GDI) than by real GDP. Real GDI, also called terms of trade-adjusted GDP, represents the change in the volume of goods and services that can be purchased with the income earned through production (real GDP).[6]

From 2002 to 2005, real GDI outpaced real GDP due to the terms-of-trade improvements (Figure 5). Over 2006, the terms of trade did not contribute noticeably to real GDI growth; however, in 2007 real GDI again began to expand more rapidly than real GDP due to a further improvement in Canada's terms of trade as resource prices and the exchange rate rose. As a result, from the first quarter of 2002 to the first quarter of 2007, GDI has increased by 21.2%, compared to a 14.0% rise in GDP.

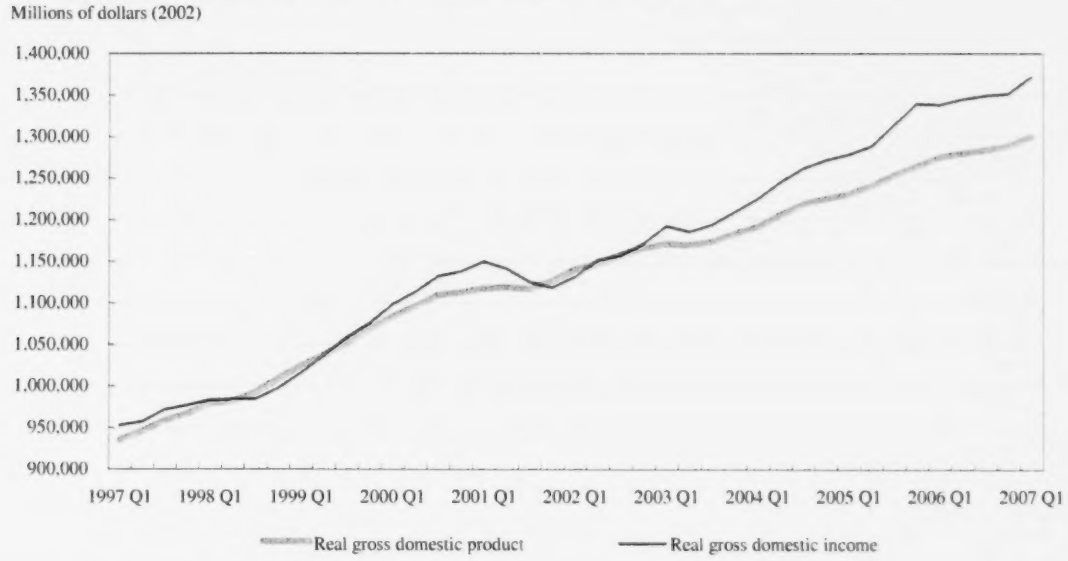
Figure 4
Commodity prices and Canada's terms of trade



Notes: Q1 = first quarter. Terms of trade have been calculated by the author.
Source: Statistics Canada, CANSIM table 179-0049.

6. For more information see Macdonald (2007) and Kohli (2006, 2004).

Figure 5
Real gross domestic product and real gross domestic income



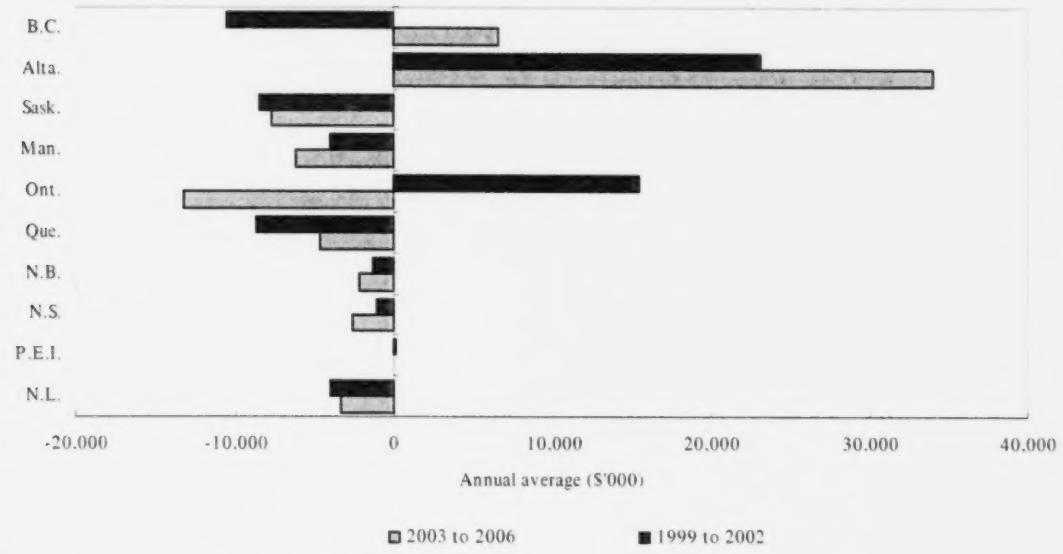
Notes: Q1 = first quarter. Real gross domestic income has been calculated by the author.
Source: Statistics Canada, CANSIM table 382-0002.

Migrants head west

Resources are not equally distributed, and resource booms are often accompanied by changes in inter-provincial migration. For Canada, the impact of rising commodity prices, particularly energy prices, is felt most acutely in the western provinces.

Inter-provincial migration statistics show a substantial population inflow into Alberta and, to a lesser extent, British Columbia over the last three years (Figure 6). Alberta received on average 35,000 net migrants a year from other Canadian provinces from 2003 to 2006. In the three prior years, Alberta received around 24,000 net migrants per year. In 2006 alone, Alberta received a net inflow of 57,105 people from other provinces, which was the largest inter-provincial movement of people to one province on record back to 1972.

Figure 6
Net inter-provincial migration



Source: Statistics Canada, CANSIM table 051-0018.

Canada and the 'China syndrome'

The integration of emerging nations, such as China, is accelerating the restructuring of the Canadian economy, which dates back several decades. Shifts in wages, prices, industrial structure and population are all being driven by the resource boom associated with rapid growth in Asia. Thus far, there have been relative price movements and some changes in input levels across sectors. These are the most recent stages of a longer-term restructuring of the Canadian economy.

Despite the reallocation that has begun, employment levels are strong. Labour markets in all provinces have coped well with the transition. Moreover, the type of dislocation implicit in the very term 'Dutch disease' has not been widespread. In fact, output has been reallocated across industries and productivity has increased.

After 2003, Canada has on balance benefited from favorable global price changes that are supported by strong international demand. The resource boom has benefited many areas of the economy, either directly or indirectly, while Canadian manufacturing overall has demonstrated resilience and adaptability.[7]

7. See, for example, "Innovative Canadian Oil Sands Manufacturing Opportunities" by Jason Myers.

The Canadian manufacturing sector has shown itself to be diverse enough that manufacturers in some areas have benefited from the resource boom. In particular, machinery and equipment, computers and electronics, primary metals and metal fabrication have increased their output following the resource price increases that began in 2003.

The post-2003 Canadian experience, while at first glance seems to be exhibiting symptoms of Dutch disease, is driven by different factors. Demand for many manufactured products has increased while inflation has remained muted. The restructuring taking place in Canada, which is being driven by a resource boom, has led to a reallocation of labour and capital. This reallocation toward resource extraction has been encouraged by falling manufactured goods prices and foreign and domestic demand growth. In Canada's case, it is better to characterize 'China syndrome' rather than Dutch disease as the leading cause of changes in the economic landscape.

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